

52 426/16

HOL. 8

Wort.

1867

Mashing
Wort,
Hopping.

RECORDED

A.D. 1867, 22nd JULY. N° 2137.

Brewing, &c.

LETTERS PATENT to William Edward Newton, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Civil Engineer, for the Invention of "IMPROVEMENTS IN BREWING, AND IN APPARTUS EMPLOYED THEREIN."—A communication from abroad by William Sylvanus Haight, of Waterford, in the State of New York, and United States of America.

Sealed the 31st December 1867, and dated the 22nd July 1867.

PROVISIONAL SPECIFICATION left by the said William Edward Newton at the Office of the Commissioners of Patents, with his Petition, on the 22nd July 1867.

I, WILLIAM EDWARD NEWTON, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Civil Engineer, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN BREWING, AND IN APPARATUS EMPLOYED THEREIN," to be as follows :—

The object of this Invention is to so treat the hops and to so construct the vessel into which they are placed that when the beer is added to the hops the whole aroma of the hops will be extracted by the beer and retained therein. To this end the hops are placed in an air-tight vessel with a perforated false bottom to act as a strainer, and one or more upper inner perforated covers to keep the hops submerged, and an outer close cover to make the extractor tight, and also a discharge pipe from the bottom for running off the beer. There are two steam chambers for keeping up the heat in the extractor, and one or more steam receiving pipes and steam discharge pipes to pass in and discharge the steam from the chamber, and also a steam pipe to pass the steam under

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the hops when desired, are arranged in the apparatus. The beer is conducted through a pipe into the close vessel, the hops being held between the perforated bottoms, one of which is hinged for the purpose of allowing the easy removal and insertion of the hops; all these pipes are provided with suitable taps or valves.

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The manner of taking the extract from one hundred pounds of hops by this process is as follows:—One hundred pounds of hops are placed in the extractor one hour before the beer is to be run from the boiling tub, and fifty gallons of water are poured over the hops at boiling heat and the extractor closed, and the hops steeped and steamed until the beer in which the extract 10 is to be used is ready to be run over the hops; then the extractor which holds two hundred gallons is filled with the boiling beer and is left to steep fifteen minutes, when it is run off from the discharging pipe below the false bottom; the extractor is then again filled with boiling beer, and the same is steeped ten minutes and discharged as before, and the process is continued 15 until all the beer is passed over the hops and out of the discharge pipe. When the hops have been drained the discharge pipe is closed and fifty gallons of water are run on the hops, and this extract may be run into the beer that is being made or kept in the extractor for the next brewing, in which case it is to be added to the first wort, or it may be heated for steeping the next 20 one hundred pounds of hops to be used. As the hop extractor in this example holds two hundred gallons there were fifty gallons of water in the first steep to prepare the hops, and one hundred and seventeen gallons of beer.

Each of the following steepings would contain one hundred and sixty-seven gallons of beer, that being the amount the extractor will hold with the one 25 hundred pounds of hops:—By first adding boiling water to the hops and letting them steep for an hour the hops are thoroughly prepared to give off all of their extract, and being kept in a close vessel none of the aroma is lost, and by adding the last water to them after the beer has been run over them one-half the beer that is retained by them will be saved.

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SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said William Edward Newton in the Great Seal Patent Office on the 22nd January 1868.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM EDWARD NEWTON, of the Office for Patents, 66, Chancery Lane, in the County 35 of Middlesex, Civil Engineer, send greeting.

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WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-second day of July, in the year of our Lord One thousand eight hundred and sixty-seven, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said
5 William Edward Newton, Her special licence that I, the said William Edward Newton, my executors, administrators, and assigns, or such others as I, the said William Edward Newton, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use,
10 exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN BREWING, AND IN APPARATUS EMPLOYED THEREIN,**" being a communication to me from abroad, upon the condition (amongst others) that I, the said William Edward Newton, my executors or administrators, by an instrument in writing
15 under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

20 **NOW KNOW YE**, that I, the said William Edward Newton, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawing hereunto annexed, and to the letters and figures marked thereon (that is to say):—

25 The object of this Invention is to so treat the hops and to so construct the vessel in which they are placed that when the beer is added to the hops the whole aroma of the hops will be extracted by the beer and retained therein.

In the present mode of brewing the malt to be operated upon is first ground,
30 and the water to steep the malt in is heated in the boiling copper or tub to the temperature wanted, after which a certain amount of water is run into the mash tub, and the malt is added to it and steeped for about two hours. The first wort is then run off from the mash tub to the underback below, and then another quantity of water is run on the malt from the boiling tub, and
35 the malt is again steeped and the second wort is run into the underback; as soon as the first extract is run off it is pumped to the boiling tub to be boiled. The second wort is treated in the same manner, and when they are boiled to near the gravity wanted for the beer the hops are put in the boiling tub with the beer and boiled from fifteen to thirty minutes; then the beer is run from

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the boiling tub and separated from the hops; the beer is then cooled and carried to the fermenting tub.

The present Invention consists of an improved manner of taking the extract from hops for the manufacture of beer, ale, or porter.

The apparatus to be employed for the purpose is shewn in the accompanying 5 Drawing, in which Fig. 1 represents a vertical cross section of the improved hop extractor; Fig. 2 is a longitudinal vertical section of the same; Fig. 3 is a plan view; Fig. 4 is a side elevation shewing the manner of connecting a series of the extractors.

The hops are placed in an air-tight vessel A with a perforated false bottom B 10 which acts as a strainer; there are also one or more upper inner perforated covers C to keep the hops submerged, and an outer close cover D to make the extractor tight; a discharge pipe E at the bottom serves for running off the beer. Two steam chambers F are for keeping up the heat in the extractor, and one or more steam receiving pipes and steam discharge pipes pass in and 15 discharge the steam from the chambers F; a steam pipe G admits the steam under the hops when desired. Through a pipe H the beer is conducted into the vessel A, the hops being held between the bottoms B and C, of which the latter is hinged for the purpose of allowing the easy removal and insertion of the hops; all these pipes are provided with suitable taps or valves as 20 shewn.

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The manner of taking the extract from one hundred pounds of hops by this process is as follows:—One hundred pounds of hops are placed in the extractor one hour before the beer is to be run from the boiling tub, and fifty gallons of water at boiling heat are poured over the hops. The extractor is closed 25 and the hops steeped and steamed until the beer in which the extract is to be used is ready to be run over the hops; then the extractor which holds two hundred gallons is filled with the boiling beer, which is left to steep for fifteen minutes, when it is run off from the discharging pipe E below the false bottom B; the extractor is then again filled with boiling beer, and 30 the same is steeped ten minutes and discharged as before, and the process is continued until all the beer is passed over the hops and out of the discharge pipe. When the hops have been drained the discharge pipe is closed and fifty gallons of water are run on the hops, and this extract may be run into the beer that is being made or kept in the extractor for the next brewing, in which 35 case it is to be added to the first worts, or it may be heated for steeping the next one hundred pounds of hops to be used. As the hop extractor in this example holds two hundred gallons there were fifty gallons of water in the first steep to prepare the hops, and one hundred and seventeen gallons of beer.

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Each of the following steepings would contain one hundred and sixty-seven gallons of beer, that being the amount the extractor will hold with the one hundred pounds of hops. It will be seen that if the hops were used for thirty-three barrels of beer they would have been subjected to five different steepings of boiling beer, and if for fifty barrels they would be subject to nine steepings:—By first adding boiling water to the hops and letting them steep for an hour the hops will be thoroughly prepared to give off all of their extract, and being kept in a close vessel none of the aroma will be lost, and by adding the last water to them after the beer has been run over them one-half the beer that is retained by them will be saved.

In boiling hops in beer as is now done the aroma of the hops is continually passing off in vapour and is lost, and also the beer which the hops retain, and which is one half gallon of beer for each pound of hops used, is also all lost, and as the beer they retain is flavored as much as the beer that is run off there is that amount of hop extract lost.

In the improved process the amount of beer lost by retention is small and that comparatively fresh, it being the last run on the hops, the amount previously run on having taken most of the extract from the hops, and thus the aroma of the hop will be saved, the latter being confined while the extract is being made.

It will be observed in the process described that one hundred gallons of water have been used on the hops. If the beer is to be kept to the gravity it leaves the boiling tub or copper, sugar or syrup is to be added to make the gravity good. If the beer is twenty-four pounds gravity then would be needed for the first water used on the hops forty pounds of sugar syrup to bring the water to that gravity, and from that fifty gallons of beer will be made, and if the extract that is on the hops after the beer has been run is also used fifty gallons more beer will be gained by adding twenty pounds of syrup, as that extract will be a trifle more than half the original gravity of the beer; thus it will be seen that one hundred gallons of beer more is made at an expense of sixty-three pounds of sugar syrup, "or five and one-quarter gallons at twelve pounds to the gallon," and the hops will flavor this extra amount of beer in this manner of using them better than the lesser amount of beer would be in the present manner of using them.

In the present manner of brewing if the one hundred pounds of hops had been used for fifty barrels of beer there would be lost by retention of hops fifty gallons of beer, while this process would give a gain of fifty gallons, making a difference of one hundred gallons or three barrels and one-third. By this process all the aroma of the hop will be saved, and a better hop flavor

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given to the beer from the same quality of hops. One-half of the beer that is retained by the hops as now used by brewers is saved by the improved process, and considerably more extract is obtained from hops by this process than by the usual method.

Where brewing is carried on on a more extensive scale two or more 5 extractors A, A, A, may be put up one above the other, as shewn at Fig. 4; they are so arranged and set that one will discharge into the other through a pipe *a*, and their covers are connected by means of pipes *b* to keep the air properly balanced and circulating. The operation is the same as before described, only a greater saving and more complete extract will be obtained, 10 as each charge of beer will be brought in regular order through five (more or less) lots of hops, and the hops are exposed at least five (more or less) times to the action of the beer, so that they will be very thoroughly extracted.

Having now described the Invention of "improvements in brewing," and having explained the manner of carrying the same into effect, I claim as the 15 Invention secured to me by Letters Patent as aforesaid,—

First, the process herein specified of extracting hops by placing them in an air-tight vessel, and applying the beer in the manner herein specified.

Second, applying steam to the hops when they are contained in an air-tight vessel preparatory to the application of the beer, as set forth. 20

Third, the process herein set forth of removing the beer from the hops from which the extract has been taken.

Fourth, the apparatus arranged as described for the purpose of hopping beer.

In witness whereof, I, the said William Edward Newton, have hereunto 25 set my hand and seal, the Seventeenth day of January, in the year of our Lord One thousand eight hundred and sixty-eight.

W. E. NEWTON. (L.S.)

Witness,

J. W. MOFFATT,

66, Chancery Lane.

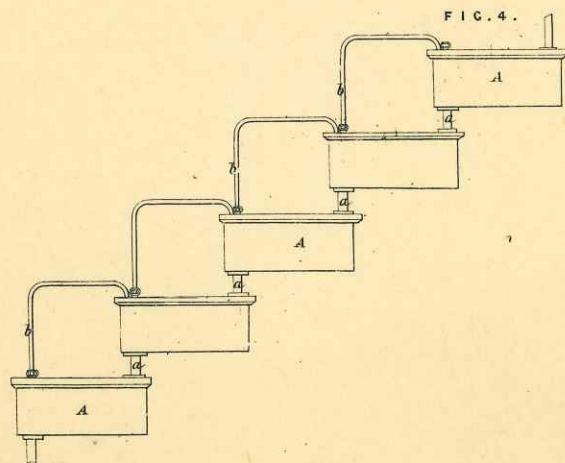
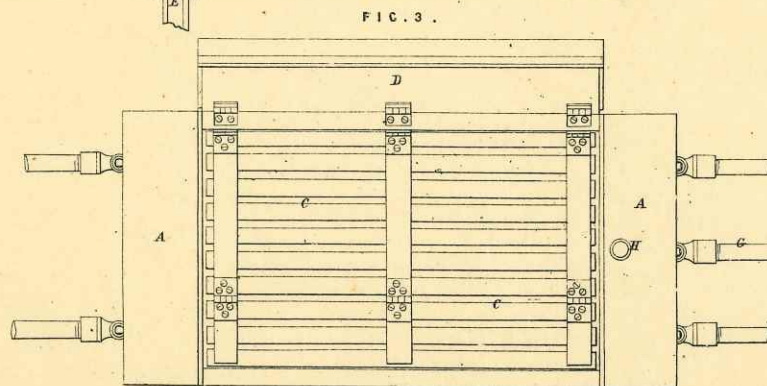
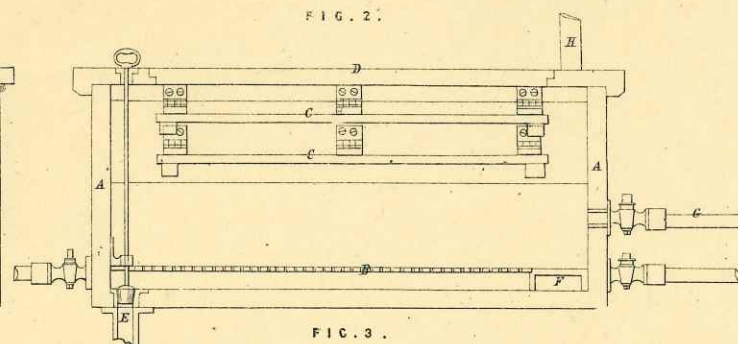
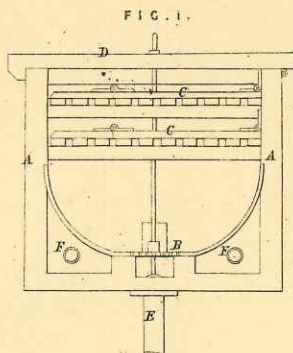
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